

creative computing software

**TRS-80
Level II (4K)**

CS-3301

GRAPHING PACKAGE

Made in U.S.A.

CREATIVE COMPUTING SOFTWARE

Morristown, NJ 07960

BAR GRAPH

by Ronald E. Tomchin

This program will draw bar and line graphs for up to six different categories. First enter the title and subtitle for the chart. Then enter the label and value for the first category separated by a comma. For example, if you have 37 oranges, you would type ORANGES, 37 and press ENTER. Do the same for the remaining values. If you have less than six values, simply enter a comma (,) and press ENTER.

The program will then display the bar chart on the screen. When you finish viewing the bar graph, press ENTER. The graph will be redrawn as a line graph. Press ENTER again to clear the screen. You can then select to review the graphs by entering 5, draw more graphs using new values by entering N, or end the

CARTESIAN COORDINATE GRAPHING

by David W. Mawdsley

This program will draw a standard cartesian coordinate (X,Y) graph. Before the program is run, the function to be graphed must be entered in line 200. For example:

$$y=10x+\text{SIN}(x)/15x^2$$

would be entered as:

$$Y=10^*X+\text{SIN}(X)/(15^{\uparrow}2)$$

If you forget to enter the function, the program will remind you.

Once the function has been entered, type RUN 5 and press ENTER. Enter the minimum and maximum values of X. The program will then take a few seconds to compute the graph. A descriptive section about the function will follow. After you draw the graph. When finished, press any key to return to BASIC.

POLAR COORDINATE GRAPHING

by David W. Mawdsley

The polar coordinate graphing program provides plots in polar coordinates. Enter the function of T in line 200. For example, to graph

$$R = \text{SIN}(T) + \text{COS}^2(T)$$

enter

$$200 \text{ } R = \text{SIN}(T) + \text{COS}(T)^{12}$$

Note: You may specify later whether T is in radians or degrees.

After the function has been entered, type RUN 33 and press ENTER. When asked, specify whether T is measured in radians or degrees. Then enter the minimum and maximum values of T desired (a maximum of greater than 360 degrees is permitted). You may also specify the interval of T you want. Smaller values of T will provide greater resolution but will take longer to plot.

It will take some time to calculate the plot. Once the plot has started, you

may stop it at any time by pressing the SHIFT and @ keys simultaneously. To restart the plot, press ENTER. The final plot will remain on the screen until you press any key.

PARAMETRIC GRAPHING

by David W. Mawdsley

This program is used to graph parametric functions. Parametric functions are of the form:

$$\begin{aligned} X &= f(t) \\ Y &= g(t) \end{aligned}$$

For example, the spacial location of a projectile fired from a cannon is dependent on time (among other factors). The horizontal and vertical positions are independent of each other. A separate equation can be defined for each position dependent on time (t).

To use this program, enter your functions of X and Y in lines 200 and 205 respectively. For example, if:

$$\begin{aligned} X &= 1+\cos(t)^2 \\ Y &= t+t \end{aligned}$$

then enter

200 X = 1+COS(T)¹²
205 Y = T+T²

Then type RUN 15 and press ENTER. Enter the minimum and maximum values for t. The graph will take a few moments to compute. Next a descriptive analysis of the function to be graphed will be displayed. Press a Y to clear the screen and draw the graph. When finished viewing the graph, press any key to return to BASIC.

LINEAR AND PARABOLIC REGRESSION

by Robert Lawrence

The following two programs are not graphic routines, but do provide a method for using the graphic routines with paired data. Regression routines are used to fit data to a simple algebraic equation. You are strongly urged to review a good book on statistics in order to understand the

assumptions and limitations of regression procedures.

To enter data from the keyboard, first enter the Y-value (dependent variable) then the accompanying X-value (independent variable). When you have finished entering the data, enter 99999. You may then review the data in order to make corrections. If changes are necessary, enter the row number, new will follow the correction routines, after which you may enter values of X for some predicted values of Y.

Both of these programs feature routines to allow you to save data on cassette files. When the test has been completed, you may in the recorder, press the RECORD and PLAY buttons, and press ENTER. When the computer has finished writing the data to the file, it will write a final record with the number 99999. Cassette data tapes created with one program can be used in the other program.

To read this tape at a later time, specify 99999 as the number indicating the end of data values. Then place the

tape containing the data in the recorder, press the PLAY button and press RETURN. The data will be loaded into the TRS-80's memory.

The linear regression program provides the equation of a line that best fits the data. This line is of the form:

$$y = A + Bx$$

The parabolic regression routine provides a similar function except the equation to which the data is fitted is:

$$y = A + Bx + Cx^2$$

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Creative Computing
P.O. Box 789-M
Morristown, NJ 07960